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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/664,988

09/17/2003

Toru Kimura

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EXAMINER

COLE, ELIZABETH M

ART UNIT

PAPER NUMBER

1771

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/06/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/664,988

Applicant(s)

KIMURA ET AL.

Examiner

Elizabeth M. Cole

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 13-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 13-22 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

1. Claims 1-6, 13-22 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification as originally filed does not provide support for the limitation that the polymer composite molded body has linear expansion coefficients of 8×10^{-5} (/C) or lower in at least three directions perpendicular to each other. The specification at table 1 describes a particular embodiment comprising carbon fiber in an amount of 25 percent by weight wherein the coefficient of linear expansion is 7.99 , 7.27 and 6.81 each $\times 10^{-5}$ (/C) in the Z, Y and X directions, respectively. It does not teach, convey or describe that the coefficient of linear expansion is 8×10^{-5} (/C) or lower in at least three directions perpendicular to each other, which is a much broader recitation and which encompasses values not disclosed or taught. The specification does not teach 8×10^{-5} (/C) as a maximum value in the specification. Also it is noted that Table 1 does not provide support for a limitation wherein each of the coefficient of linear expansion is the same in all three directions. The claim as written is ambiguous and in the remarks it appears that Applicant is contrasting the claimed invention to the invention in JP '310 by saying that in JP '310 that coefficient of linear expansion in the different directions are different since the material is described as being anisotropic. However, the coefficient of linear expansion in Table 1 of the instant specification is also different in each direction.

2. Claims 1-6,13-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear whether the claims are reciting that all the coefficients of linear expansion in each direction are the same or only reciting that they are less than 8×10^{-5} (/C) in each direction. The claims are not clear. Since Table 1 of the specification which is pointed to as providing support for the limitation, does not show that the values are all the same for each direction, for purposes of the art rejection below, the limitation regarding the linear coefficient being less than 8×10^{-5} (/C) in each direction will be assumed to be a maximum value but not a requirement that in each direction the linear coefficient is the same.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6, 13-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002212310 A, in view of "FRP Library, Fiber Reinforced Polymer Composites". JP '310 discloses a molded article comprising a polymeric material which may be reinforced with a fabric, (paragraph 0056) and which further comprises short fibers which may be oriented in a single direction by the application of a magnetic field, (paragraph 0017). The fibers have a length of 10 mm or less and the claimed anisotropic diamagnetic susceptibility, (paragraphs 0017 and 0018). The fibers may comprise organic fibers, (paragraph 0017). Looking at paragraph 0054, JP '310

teaches that the polymeric material may be reinforced with a fabric and that the short fibers can be intermingled with the fabric. See paragraph 0054. Looking at figure 2d, the short fibers can be oriented in a direction which crosses the plane of reinforcing fabric, since the fibers are perpendicular to the upper and lower faces of the molded material. Since the fabric reinforcement would have to be parallel to the upper and lower faces, and since figure 2d teaches that the fibers can be perpendicular to the upper and lower faces and since paragraph 0054 teaches that the short fibers are intermingled with the fabric reinforcement, JP '310 teaches a polymeric molded material comprising a reinforcing fabric wherein the molded material may further comprise short fibers which are oriented in a direction perpendicular to the reinforcing fabric and which penetrate the reinforcing fabric.

5. JP '310 differs from the claimed invention because it does not clearly state that the fibers are oriented in a direction crossing the fabric, however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have chosen the direction of orientation of the fibers so that they provided optimum reinforcement to the molded article. Further, it is noted that the examples in JP '310 teaches that the fibers can be oriented in either the longitudinal or thickness direction. See paragraphs 0098 , 0099. With regard to the limitation that the fabric is penetrated by some of the fibers, JP '310 teaches that the reinforcing fibers can be intermingled with the fibers, which would equate to the limitation to the regarding the fibers penetrating the fabric. See paragraph 0054. JP '310 differs from the claimed invention because it does not teach that the linear expansion coefficients are less than 8×10^{-5}

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(/C) in each direction. JP '310 teaches employing polyester fibers in order to form a material having good anisotropic properties. "Fiber Reinforced Polymer Composites" teaches that carbon fibers have very low coefficients of thermal expansion and are also isotropic materials. See page 5. JP '310 teaches in the background section of the invention that it is known to employ carbon fibers to form fiber reinforced composites such as those taught in JP '310 but that the polyester fibers produce a material having good anisotropic properties. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed carbon fibers rather than polyester fibers in the invention of JP '310, motivated by teaching of JP '310 that carbon fibers can be used to form such fiber reinforced composite materials, and by the teaching of "Fiber Reinforced Polymer Composites" that carbon fibers have a very low coefficient of linear expansion. Once carbon fibers were employed as the fiber reinforcement in JP '310, it is reasonable to presume that the claimed linear expansion values would be present since the structures would be the same.

6. Applicant's arguments filed 12/11/06 have been fully considered but they are not persuasive. Applicant argues away from the claimed invention because JP '310 teaches away from the claimed invention because JP '310 teaches an anisotropic material wherein the linear expansion coefficient is different in the three directions. However, table 1 of the instant invention clearly shows that the claimed material is also anisotropic because the coefficients are different in each of the different direction. JP '310 does not anticipate the claimed invention because it does not teach a maximum value of the linear expansion coefficient of 8×10^{-5} (/C) in each direction, not because it teaches an

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anisotropic material, since the limitation regarding the linear expansion coefficient does not require an isotropic material, but instead recites a maximum value for the linear expansion coefficient in one direction. The issue of the linear expansion coefficient is distinct from the issue of anisotropy and would have to do, at least in part, with the inherent properties of the particular materials used. Thus, a material could have linear expansion coefficients in all three of the X, Y and Z directions which was less than 8×10^{-5} (/C), but still be anisotropic, i.e., have different values for each of X, Y and Z directions, as long as each value was below the maximum set forth in the claim. The new limitation regarding the particularly claimed maximum value is addressed in the art rejection above.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

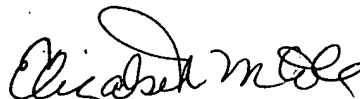
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth M. Cole whose telephone number is (571) 272-1475. The examiner may be reached between 6:30 AM and 6:00 PM Monday through Wednesday, and 6:30 AM and 2 PM on Thursday.

Mr. Terrel Morris, the examiner's supervisor, may be reached at (571) 272-1478.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

The fax number for all official faxes is (571) 273-8300.



Elizabeth M. Cole
Primary Examiner
Art Unit 1771

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